IZYUMOV, A.N.

Genetic and agroecologic qualities of soils in Kedabek District.
Dokl. AN Azerb. SSR 19 no.8: 59-62 '63.   (MIRA 17:11)

1. Sektor erozii AN AzSSR. Predstavleno akademikom AN AzSSR V.R.
Volobuyevym.

ALIYEV, G.A., akademik; IZYUMOV, A.Z., red.

[Brown forest soils; in regions of the eastern part of
the Greater Caucasus] Korichnevye lesnye pochvy; v pre-
delakh vostochnoi chasti Bol'shogo Kavkaza.   Baku, Izd-vo
AN Azerbaidzh.SSR, 1965.   111 p.   (MIRA 18:11)

1. Akademiya nauk Azerbaydzhanskoy SSR (for Aliyev).

IZYUMOV, V.N.; KOPOSOVA, T.L.; Prinimali uchastiye: KOMOVA, Z.P.; BUNTOVA, V.I.

Synthesis of alkyd resins modified by monobasic acids.
Lakokras. mat. i ikh prim. no.5:2-5 '63.   (MIRA 16:11)

1. Yaroslavskiy tekhnologicheskiy institut.

IZYUMOV, B. D.

The problem of stabilizing aqueous solutions of carbamide resins. A. A. Berlin and B. D. Izyumov, J. Applied Chem. (U.S.S.R.) 19, 23-9(1946)(English summary).—A new class of stabilizers for aq. solns. of carbamide resins was found in resins PFD; condensation products of PhOH, dicyanodiamide, and CH_2O. The best effect is achieved by the use of 60% aq. solns. of these

PFD resins made from 40-60 parts PhOH and 40-60 parts dicyanodiamide with formalin. PhOH 64, formalin 138, and NaOH 1.8 in water 3 parts were heated to 45° with stirring, when the exothermic reaction caused a rise to 65°, which was held for 2-2.5 hrs., when 36 parts dicyanodiamide was added with a temp. rise to 80-5°; after 1-1.5 hrs. at this temp. the mixt. had specific viscosity of 14-16 and the reaction was stopped. The aq. soln. was storable for a month at 10-15°. The optimum amt. of the stabilizer was found to be about 10% on wt. of the carbamide resin. G. M. Kosolapoff

USSR/Chemical Technology. Chemical Products and Their Application — Silicates. Glass. Ceramics. Binders, I-9

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5335

Author: Kudryashev, I. T., Izyumov, B. D.

Institution: None

Title: Imparting Hydrophobic Properties to Cellular Concrete

Original
Publication: Beton i zhelezobeton, 1956, No 8, 290-293

Abstract: To decrease water absorption of cellular concrete it is recommended to apply to their surface, with a paint brush, water soluble organic silicon compounds (SC) — methyl- and ethyl silicomates of sodium (MSG-9 and ESG-9), mixed with finely dispersed filler (cement of ground sand). Concentration of the aqueous solution of SC must be 2-4%. The surfaces being thus impregnated need not be predried. A considerable effect of the SC becomes manifest only after a short duration moistering of the articles (≥24 hours). Aqueous solution of SC can be mixed with water soluble paints. The possible fields of application of SC are stated.

Card 1/1

S/04?/6?/000/001, 019/024
B101/B206

AUTHORS: Izyumov, B. D., Pakhomov, V. I., Panfilov, I. M.

TITLE: New types of organosilicon plastics

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 5, 1961, 619, abstract
              5П38 (5P38) ("Vestn. tekhn. i ekonom. inform. N.-i. in-t
              tekhn.-ekon. issled. Gos. kom-ta Sov. Min. SSSR po khimii",
              1959, no. 3 (15), 3-6)

TEXT: A short characteristic of organosilicon compounds is given: KMK-9
(KMK-9) molding powder, KMK-218 (KMK-218), KMC-9 (KMS-9) molding materials,
and CKП-9 (SKP-9) glass textolite (technological, physico-chemical,
physico-mechanical, and dielectric properties, temperature-dependence
of dielectric and mechanical characteristics). [Abstracter's note:
Complete translation.]

Card 1/1

S/081/61/000/014/028/030
B105/B202

AUTHORS: Izyumov B. D., Pakhomov V. I., Gol'dshteyn Zh. I.

TITLE: Water soluble hydrophobic organosilicon liquids

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 14, 1961, 619, abstract
                  14П55 (Vestn. tekhn. i ekon. inform. N.-i. in-t tekhn.-ekon.
                  issled. Gos. kom-ta Sov. Min. SSSR po khimii, 1959,
                  No. 5 (17), 45-48)

TEXT: The authors discuss the properties and the fields of application of
water-soluble organosilicon polymers which are used to waterproof textile
products, paper, carton, leather, and building materials. Materials are
waterproofed by means of aqueous solutions of the liquid ГМС-9 (GMS-9) in
the presence of catalysts $(NH_3, CH_3COOH, H_2O_2$, triethylamine, alum etc.)
and by subsequent heat treatment (5-10 min at 130-150°C) for the fixation
of the foil. The liquids MSG-9 and ES-9 are aqueous solutions of sodium
methyl and ethyl siliconate. They are applied by a brush, a spray or by
immersion, and subsequently dried on air. The authors give data on the

Card 1/2

Water soluble hydrophobic ...

S/081/61/000/014/028/030
B105/B202

effectiveness of the treatment of a series of materials by the liquids mentioned. [Abstracter's note: Complete translation.]

Card 2/2

Thermostable silico-organic glues

S/661/61/000/006/072/081
D247/D302

lico-organic glues tested were found to last for 100 hours at 200 – 350°C, 10 hours at 300 – 350°C and 10 – 20 hours at 400°C. There are 9 figures and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: R. R. McGregor, Silicones and their uses, New York, (1954).

ASSOCIATION: Nauchno-issledovatel'skiy institut plastmass, Moskva
               (Scientific Research Institute of Plastics, Moscow)

Card 2/2

S/661/61/000/006/073/081
D247/D302

AUTHORS: Pakhomov, V. I., Izyumov, B. D. and Panfilova, I. P.

TITLE: Thermal stability and resistance of silico-organic
             pressed materials to arcing

SOURCE: Khimiya i prakticheskoye primeneniye kremneorganiches-
             kikh soxedineniy; trudy konferentsii, no. 6: Doklady,
             diskussii, resheniye. II Vses. konfer. po khimii i
             prakt. prim. kremneorg. soyed., Len. 1958. Leningrad,
             Izd-vo AN SSSR, 1961, 316-322

TEXT: A series of silico-organic pressed materials were examined
for their stability, mechanical and dielectric properties. Their
composition and uses were recorded, and also their appearance. In
the discussion, in which B. A. Kiselev (Moscow) took part, parti-
cular properties of various resins were mentioned. The greatest
thermal stability noted was 100 hours at 350 - 400°C and the high-
est limit before electrical breakdown was 18 kV/mm. There are 8
figures, 1 table and 8 references: 5 Soviet-bloc and 3 non-Soviet

Card 1/2

IZYUMOV, B.D., red.; OSIPOVA, V.M., red.

⌐The chemical industries of Russia] Bol'shaia khimiia
Rossii; sbornik. Moskva, Sovetskaia Rossiia, 1964.
222 p. (MIRA 17:12)

IZYUMOV, Boris Mironovich; BOLDYREV, V.I., retsenzent; FEDLOVA,
Ye.I., red.izd-va; SHKLYAR, S.Ya., tekhn. red.

[Safety engineering in the use of electric maining equipment]
Tekhnike bezopasnosti pri ekspluatatsii shakhtnykh elektro-
ustanovok. Moskva, Gosgortekhizdat, 1963. 147 p.
                                              (MIRA 16:5)
        (Electricity in mining—Safety regulations)

IZYUMOV, Boris Mironovich; TYLKIN, M.N., red.

[For the mine electrician] Rabotniku shakhtnogo elektro-
khoziaistva. Tula, Tul'skoe knizhnoe izd-vo, 1964. 69 p.
(MIRA 18:3)

ANTONYUK, B.N.; DENESYUK, I.P.; KUROV, Yu.E.; VAYNSHTEYN, ; ...; ...RNIKOV, V.A.;
    VEYTSMAN, M.B.; IVANOV, A.A.; IVANOV, A.S.; GAYEVSKII, E.G.; KOZEL'TSEV,
    I.K.; KOZEL'TSEV, L.I.; KUVALDIN, S.G.; MIROSHIN, A.I.; MINKOV, G.Ye.;
    ZUBKOVSKIY, B.P.; IZYUMOV, B.N.; EDEL'SHTEYN, V.I.; KOCHETKOV, V.P.;
    BUBLIKOV, A.V.; DZHANASHIYA, V.A.

    Patents. Bum. i der. prom. no.1:53-54 Ja-Mr '65.

                                                    (MIRA 18:10)

IZYUMOV, G.I.

Physiology of digestion in Didinium nasutum O.F.M. Trudy Len.ob-va
est. 69 no.4:137-145 '47.   (MLRA 9:3)

1. Laboratoriya zoologii bespozvonochnykh Leningradskogo gosudar-
stvennogo universiteta, zaveduyushchiy professor V.A. Dogel'.
                           (Ciliata)

Digestive processes in Stylonychia mytilus. I) I. Izyumov (Leningrad State Univ.). Zool. Zhur. 27, 305-12(1948). The physiology of digestive processes of this protozoan is discussed. The digestive vacuole starts with pH 7.4 in its interior, declines to 5.1, then a value of 8.3 is reached at the more advanced stage of digestion in 2-2.5 hrs. The main stored food matter is fat and smaller amts. of glycogen. In fasting, the former vanishes in 4 days. The optimum temp. is 14-16° for the organism (digestive and reproductive processes). The oxidizability of the medium is also important, as too much org. matter is harmful; the optimum value of oxidizable matter is equiv. to 24.8 ml 0.1 N KMnO₄ per 10 ml.

G. M. Kosolapoff

IZYUMOV, G.I., kand.biolog.nauk

Reproduction of wild animals in captivity. Priroda 51 no.6:70-77
Je '62.   (MIRA 15:6)

1. Leningradskiy zoopark.
      (Animals, Habits and behavior of)   (Reproduction)

S/081/61/000/007/008/010
B107/B207

AUTHOR: Izyumov, I. D.

TITLE: Plastics tested under conditions of tropical climate

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 7, 1961, 549, abstract
              7П4 (7P4) ("Vestn. tekhn. i ekon. inform. N.-i. in-t
              tekhn.-ekon. issled. Gos. kom-ta Sov. Min. SSSR po khimii",
              1959, no. 1(13), 25-30)

TEXT: The physicomechanical properties of standard samples were tested
under the climatic conditions prevailing in the Union of Burma. The
standard samples consisted of thermosetting and thermoplastic materials
produced in the Soviet Union. The majority of samples were tested in
the open air on a tennis court. Another portion was packed into a case
and stored in a moist room which could not be aired. The third portion
was dug into the ground at a depth of approximately 50 - 60 cm.
Experiments showed that the properties of some materials (acetyl cellulose
etrols, 2-ДТ-55 (2-DT-55), 2-ДТ-30 (2-DT-30), polyvinyl ethylal, ПОК -60
(POK-60), ПОВ -67 (POV-67) etc.), considerably deteriorated: they became

Card 1/2

IZYUMOV, I.F.

Basis of three coil sondes for induction logging. Geol. i geofiz. no.6:145-149 '64. (MIRA 18:11)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR, Novosibirsk.

IZYUMOV, M. A. (Moskva); KHZMALYAN, D. M. (Moskva); YAKOVLEVSKIY, O. V. (Moskva)

Propagation of a plane jet system. Inzh. zhur. 2 no.4:269-277
'62.   (MIRA 16:1)

(Jets)

IZYUMOV, M.A., inzh.; KUTMAN, B.L.; LYAKH, V.Ya., inzh.; KHZMALYAN, D.M.,
kand.tekhn.nauk

Conversion of a TKP-3 boiler to firing coal dust in plane parallel
jets. Teploenergetika 10 no.2:11-14 F '63.   (MIRA 16:2)

1. Upravleniye energeticheskoy promyshlennosti Soveta narodnogo
khozyaystva Permskogo ekonomicheskogo administrativnogo rayona
i Moskovskiy energeticheskiy institut.
                                    (Boilers)

ACC NR: AP7006033

AUTHOR: Zabelin, K. (Engineer); Izyumov, N. (Engineer); Klibson, V. (Engineer); Pevzner, I. (Engineer)
ORG: none
TITLE: "Vecher" television set
SOURCE: Radio, no. 11, 1966, 29-32
TOPIC TAGS: TV receiver, electronic equipment

ABSTRACT: The authors describe the "Vecher", a new Soviet television set put out by the Plant im. Kozitskiy in Leningrad. The new unit differs from previous sets both in external design and in the fact that it contains both tubes (8) and transistors (21) in addition to 25 semiconductor diodes. The parameters of this new set satisfy GOST requirements for second class television receivers. A complete schematic diagram is given with a detailed description of the operation of each stage. Construction is modular on a vertical chassis with printed circuits used in most modules. Provision is made for rotating the chassis through 180° and locking at 90° for facilitating inspection and repair of the unit. The channel selector is mounted on the front panel together with the T. V. tube and speakers. The other main control units (on-off switch, contrast, brightness, volume and tone controls) are located on top of the set. On the back of the set are auxiliary controls as well as jacks for antenna connection, earphone and tape recorder inputs, a fuse plug, and panels for connecting stereo and remote control attachments. The cabinet is made from wood and plastic. The set measures 610x480x340 mm overall and weighs about 25 kg. Orig. art. has: 2 figures. [JPRS: 39,548]
SUB CODE: 17, 09
Card 1/1

IZYUMOV, N. M.

"Radio Engineering Course for Military Communications Schools", Voyennoye Izdatel'-
stvo 2nd edition, 552 PP, 1950.

IZYUMOV, Nikolai Mikhailovich, doktor tekhnicheskikh nauk, professor; ISLANKINA, T.F., redaktor; ISLENT&YEVA, P.G., tekhnicheskiy redaktor.

[Radio relay communication] Radioreleinaia sviaz'. Moskva, "Znanie." 1954. 15 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii, Ser.4, no.29) [Microfilm]
(Radio relay systems)

(MLRA 7:12)

IZYUMOV, N.M.

[Radio relay communication] Radioreleinaia sviaz'. Moskva,
Gosenergoizdat, 1954.   104 p.
(MLRA 8:2D)

IZYUMOV, N.M.

[Radio reception] Radiopriem. Moskva, Voenizdat, 1954. 507 p.
(MLRA 7:11D)

Izyumov, N. [?]

USSR/ Miscellaneous - Radio communication

Card 1/1   Pub. 89 - 3/32

Authors   :Izyumov, N.

Title   :Radio communication and radio engineering in the Armed Forces

Periodical   :Radio 2, 4 - 5, Feb 1955

Abstract   :An outline on the history of the development and use of radio and radio communications in the Armed Forces is presented on the occasion of the 60th anniversary of the innovation of the radio by Alexander Stepanovich Popov.

Institution: .....

Submitted: .....

IZYUMOV, N., professor, doktor tekhnicheskikh nauk.

Ways to a "universal communication system." Radio no.11:12 N'55.
(Telephone)
(MLRA 9:1)

IZYUMOV, N., Maj Gen. Eng-Tech. Service, Dr. Tech. Sci., Professor.

"Ultrashort Radiowaves," from the book, Modern Military Technology, 1956, page 145.

Translation 1114585

IAYUMO', N.

On the road to "universal contacts." Tr. from the Russian. p. 3.

RADIO. Vol. 5, no. 7, 1956

Sofila, Bulgaria

SOURCE: East European Accessions List (EEAL) Library of
Congress, Vol. 6, No. 1, January 1957

IZYUMOV, N.M.

On the textbook "Electronic instruments." V.S.Griger'ev, B.S.
Griger'ev. Reviewed by N.M.Iziumev. Elektrosviaz' 10 no.2:72-73
F '56.
(Electronic apparatus and appliances)(Griger'ev, V.S.)(Griger'ev,
B.S.)

(MIRA 9:6)

PHASE I BOOK EXPLOITATION   908

Izyumov, Nikolay Mikhaylovich

Kurs radiotekhniki (Course in Radio Engineering) 3rd ed., rev. and enl. Moscow,
  Voyen. izd-vo M-va obor. SSSR, 1958. 687 p. No. of copies printed not given.

Ed.: Vrublevskiy, A.V., Engineer-Lt. Col.; Tech. Ed.: Sribnis, N.V.

PURPOSE: The monograph is intended for students of vocational schools specializing
  in communications. It may also be used by the general reader with a secondary
  school education who has taken a general course in electrical engineering.

COVERAGE: General aspects of radio communication and radio equipment are presented.
  The book discusses the fundamentals of radiation and propagation of radio waves,
  oscillatory circuits and feeders, vacuum and semiconducting devices, and trans-
  mitting and receiving devices. Principles of radio relay communication and simple
  methods of checking transmitters and receivers are also described. No personalities
  are mentioned. There are 32 Soviet references.

Card 1/13

IZYUMOV, Nikolay Mikhaylovich; TARASOV, F.I., red.; BORUNOV, N.I., tekhn. red.

[Radio relay communications]Radioreleinaia sviaz'. Izd.2., polnost'iu perer. Moskva, Gosenergoizdat, 1962. 94 p. (Massovaia radiobiblioteka, no.447)   (MIRA 15:12)
(Radio relay systems)
(Microwave communication systems)

VLASOV, Viktor Fedorovich; Prinimal uchastiye OVCHINNIKOV, N.I.,
        dots.; IZYUMOV, N.M., prof., retsenzent; ITSKHOXI, Ya.S.,
        prof., nauchnyy red.; LARIONOV, G.Ye., tekhn. red.

        [Course in radio engineering] Kurs radiotekhniki. Moskva, Gos.
        energ. izd-vo, 1962. 927 p.   (MIRA 15:3)
                                  (Radio)

L 2967-66   EWT(d)/EWP(k)/EWP(l)   JKT
ACCESSION NR: AP5026357   UR/0105/64/000/009/0093/0094

AUTHOR: Baluyev, V. K.; Grudinskiy, P. G.; Izyumov, N. M.; Kulebakin, V. S.;
Mirolyubov, N. N.; Sotskov, B. S.; Tsirlin, A. D.; Alekseyev, A. Ye.;
Bogoroditskiy, N. P.; Berger, A. Ya.; Yavorskiy, V. N.; Nasledov, D. N.;
Vasil'yev, D. V.

TITLE: Nikolay Nikolayevich Lutsenko (Obituary)

SOURCE: Elektrichestvo, no. 9, 1964, 93-94

TOPIC TAGS: electric engineering personnel

ABSTRACT: Doctor of Technical Sciences, Major General in the Technical
Engineering Service, Professor N. N. Lutsenko died in May of this year
after a long and serious illness. He graduated from the Moscow Higher
Technical Academy in 1914 and was closely associated with his specialty
of electrical engineering till the end of his life. He spent the first
years of his practical activity at the Academy working in the electrical
engineering laboratory of K. A. Krug. After that he began his career in
the Soviet Army as a lowly laboratory assistant in the radiotechnical
laboratory and worked his way up over thirty years to be head of the

Card 1/2 .

L 2967-66

ACCESSION NR: AP5026357

Department of Electrical and Military Engineering. He wrote several books: "Alternating Currents," "The Theory of Alternating Currents," "Course in General Electrical Engineering," "Radio Engineering" and, together with his co-workers, problem books on "A Course in Alternating Currents" and "The Physical Principles of Electrical Engineering." He set up a number of special courses (military application of electric power, military portable electric power stations, electric equipment for armies, electrification of military engineering works, etc.) and also participated in many engineering projects with the Soviet Army. He has written many textbooks, monographs and articles on the theoretical and applied divisions of military electrical engineering. These include "Electric Circuits" and "Fundamentals for the Design and Planning of Mobile Electric Stations." Many of N. K. Lutsenko's students are working in sections of the Soviet Army, in scientific institutes and in colleges, and in industry. These students are continuing the work of their teacher, the founder of Soviet military electrical engineering. He received his professorship in 1938 and his doctorate in 1949. He has received the Order of Lenin, three "Red Banners," the Order of the "Red Star" and many medals. Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 00

NO REF SOV: 000

ENCL: 00

OTHER: 000

SUB CODE: EE

JPRS

Card 2/2

IZYUMOV, Nikolay Mikhaylovich; AMALITSKIY, V.V., otv. red.;
    VEYTSMAN, G.I., red.

    [Principles of radio engineering] Osnovy radio tekhniki.
    Moskva, Sviaz', 1965. 541 p.   (MIRA 18:9)

VERTSMAN, G.Z., kand. tekhn. nauk; PANTELEYEV, P.I., kand.
tekhn. nauk; GOMOLYAKO, I.M.; TAL', K.K.; GUSEVA, K.G.;
LUGOVOY, P.A.; MASSAN, A.M.; GALKIN, N.V.; SAFRYGINA, G.M.;
CHESNOKOV, D.S.; DROZDKOV, V.I.; IZYUMOV, P.S.; ZAK, B.O.;
KOROGID, P.Ye.; MAKSIMOVICH, L.N.; ZBOROVSKAYA, M.I.;
PAVLOVSKAYA, S.A.; BORISOV, A.V.; SELIVANETS, N.Ye.; ITKES,
V.M.; YATSKEVICH, Ya.D.; KOZYRSKIY, N.P.; NIKITIN, V.D.;
NEKLEPAYEVA, Z.A., inzh., red.; MEDVEDEVA, M.A., tekhn.red.

[Design and planning of railroad stations and junctions]
Proektirovanie zheleznodorozhnykh stantsii i uzlov; spra-
vochnoe i metodicheskoe proizvodstvo. Moskva, Transzheldor-
izdat, 1963. 443 p. (MIRA 16:12)

1. Nauchno-issledovatel'skiy institut transportnogo stroitel'-
stva (for Guseva). 2. Gosudarstvennyy institut tekhniko-
ekonomicheskikh izyskaniy i proyektirovaniya zheleznodorozh-
nogo transporta (for Zak). 3. Kiyevskiy gosudarstvennyy pro-
yektno-izyskatel'skiy institut (for Kozyrskiy). 4. Moskovskiy
institut inzhenerov zheleznodorozhnogo transporta Im. I.V.
Stalina (for Nikitin).
(Railroad engineering)

FILONENKO-BORODICH, Mikhail Mitrofanovich; IZYUMOV, S.M.; OLISOV, B.A.;
    KUDRYAVTSEV, I.N.; MAL'GINOV, L.I.; SNITKO, I.K., redaktor;
    GAVRILOV, S.S., tekhnicheskiy redaktor

    [A course in strength of materials] Kurs soprotivleniia materialov.
    Pod obshchei red. M.M.Filoneko-Borodich. Izd. 4-o3, perer. Moskva,
    Gos. izd-vo tekhniko-teoret. lit-ry, Pt.2. 1956. 539 p. (MIRA 10:2)
        (Strength of materials)

FILONENKO-BORODICH, Mikhail Mitrofanovich; IZYUMOV, S.M.; OLISOV, B.A.;
        MAL'GINOV, L.I.; SNITKO, I.K., red.; MURASHOVA, N.Ya., tekhn.
        red.

    [Strength of materials course] Kurs soprotivleniia materialov.
    Pod obshchei red. M.M.Filonenko-Borodicha. Izd.5., perer. Mo-
    skva, Gos. izd-vo fiziko-matem.lit-ry. Pt.1. 1961. 656 p.
                                                    (MIRA 15:3)
                    (Strength of materials)

IZYUMOV, S.P., ekonomist

Irtysh-Karaganda Canal and bringing virgin lands of its zone under cultivation. Gidr,i mel. 14 no.3:9-15 Mr '62.   (MIRA 15:4)

1. Vsesoyuznyy gosudarstvennyy proyektno-izyskatel'skiy i nauchno-issledovatel'skiy institut Ministerstva sel'skogo khozyaystva SSSR (Irtysh Valley--Agriculture)   (Karaganda Valley--Agriculture)

24(3)

AUTHORS: Skrotskiy, G. V.,   Zyryanov, P. S.,   Izyumov, T. G.

TITLE: The Influence of Paramagnetic Electron Resonance on the
             Optical Effect of Faraday at Low Temperatures (Vliyaniye
             elektronnogo paramagnitnogo rezonansa na opticheskiy effekt
             Faradeya pri nizkikh temperaturakh)

ABSTRACT: Daniels and Wesemeyer (Daniyels, Vezemeyer)(Ref 1) experimen-
             tally investigated the influence exercised by magnetic
             resonance on the optical Faraday (Faradey) effect. They worked
             with neodymium ethylene sulfate single crystals at 1.5° K,
             9060 megacycles, and 5461 Å. Kastler (Ref 2) was the first
             to investigate the connection between Faraday effect and
             paramagnetic resonance, and Opechowski (Opekhovskiy) (Ref 3)
             carried out the respective quantum-mechanical calculations.
             The results obtained are discussed in the introduction. The
             authors of the present paper investigated these phenomena on
             the basis of the usual macroscopical theory; an explicit ex-
             pression is derived for the angle of rotation of the polariza-
             tion plane of a light wave near paramagnetic resonance in a

Card 1/3

SOV/56-35-6-22/44

. The Influence of Paramagnetic Electron Resonance on the Optical Effect of Faraday at Low Temperatures

2 of which are Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut
(Ural Polytechnic Institute)

SUBMITTED: June 19, 1958

Card 3/3

IZYUMOV, V. A.

USSR/Metals
    Metallography
    Polarography

Feb 1947

"Metallographic Studies in Polarized Light," V. A. Izyumov, 2½ pp

"Trudy Tsent Orden Lenin Nauch Issled Inst" No 12

Describes micrographic method of studying metals with aid of polarized light. Old method but not widely used in Soviet metallurgical techniques. To stimulate interest in this method editors publish methods and advantages in use of a polarized light study of metals.

IC
                                          53T04

IZYUMOV, V.A.; ROMANIV, (.N.; TABINSKIY, K.P.

Thermomechanical working of the 60S2 spring steel. Vop. mekh. real. tver. tela no.3:188-191 '64.

(MIRA 17:11)

BELEN'KIY, Ye.F. [deceased]; RISKIN, I.V.; YUKHNOVSKIY, O.L., prof.,
retsenzent; RATNIKOVA, K.I., dotsent, retsenzent; OOL'DBERG,
K.M., kand.tekhn.nauk, retsenzent; IZYUMOV, V.N., inzh.,
retsenzent; AYZENBERG, Ye.S., red.; FOMKINA, T.A., tekhn.red.

[Chemistry and technology of pigments] Khimiia i tekhnologiia
pigmentov. Izd.3., ispr. i dop. Leningrad, Gos.nauchno-tekhn.
izd-vo khim.lit-ry, 1960. 756 p.   (MIRA 14:4)

1. Zaveduyushchiy kafedroy lakov i krasok Khar'kovskogo poli-
tekhnicheskogo instituta (for Yukhnovskiy). 2. Kafedra lakov i
krasok Khar'kovskogo politekhnicheskogo instituta (for Ratnikova).
                (Pigments)

S/081/61/000/021/084/094
B145/B144

AUTHOR: Izyumov, V. N.

TITLE: Use of p-tert-butyl benzoic acid for the synthesis of resins
for paints and varnishes

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1961, 456, abstract
21P112. (Lakokrasoohn. materialy i ikh primeneniye, no. 1,
1961, 3 - 8)

TEXT: The glycerol and pentaerythritol esters of butyl benzoic acid (I),
as well as the glyptal resins (II) and pentaphthalic resins (III), modified
with I, were synthesized and their usability for producing various varnish
and paint materials examined. It has been found that, owing to the
relatively simple synthesis of I, the latter must be counted among the
most economic and inexpensive raw materials for varnishes and paints. It
is noted that the pentaerythritol esters of I improve the gloss, hardness,
and water resistance of nitrolacquer coatings substantially. II and III
free from oil and modified by I are economic and high-quality solid resins

Card 1/2

IZYUMOV, V.N.

"Chemistry of lacquers, colors, and pigments" by G.Chempetier,
G.Rabate. Reviewed by V.N.Iziumov. Lakokras.mat.i ikh prim.
no.1:84-85 '61.
           (Paint materials)   (Champetier, G.)   (MIRA 14:4)
                             (Rabate, G.)

IZYUMOV, V.N.; Prinimali uchastiye: BUNTOVA, V.I.; KISELEVA, Z.P.

Synthesis of pentaphthalic resins modified with n-tert-butylbenzoic acid and manufacture of paint materials on their base. Lakokras.mat.i ikh prim. no.6:3-6 '62.   (MIRA 16:1)

1. Yaroslavskiy tekhnologicheskiy institut.
       (Resins, Synthetic) (Paint materials)

AUTHOR: Izyumov, Ya. A.

TITLE: Theory of scattering of slow neutrons in magnetic crystals

SOURCE: Uspekhi fizicheskikh nauk, v. 80, no. 1, 1963, 41-92

TOPIC TAGS: slow neutron scattering, magnetic crystal , phonon , magnon , emission, absorption, neutron polarization

ABSTRACT: The theory of scattering of slow neutrons in crystals is presented systematically, with principal attention focused on magnetic scattering, particularly on questions which have become important in recent years, such as inelastic scattering, critical scattering, and the scattering of polarized neutrons. The presentation is within a unified mathematical treatment corresponding to a description of the scattering in the Born approximation. By introducing the so-called time formalism, first used by Van Hove (Phys. Rev. v. 95, 249 and 1374, 1954), the problem of calculating the scattering cross section per unit solid angle and per unit energy interval is reduced to a computation of the Fourier components of the correlations between the positions of two atoms in the lattice at different instants of time, and

Card 1/2

L 14524-63

ACCESSION NR: AP3002506

to a calculation of the correlation functions of the spin projections, for the nuc-
lear and magnetic scattering, respectively. The appropriate mathematical apparatus
is first developed and applied to an analysis of the interaction between slow neut-
rons and a magnet and to the determination of the differential cross section for
scattering of unpolarized neutrons. This is followed by consideration of elastic
nuclear and magnetic scattering of neutrons in single- and polycrystals and an ex-
position of the fundamentals of nuclear and magnetic neutronography. Inelastic scat-
tering of neutrons is then considered, with the discussion limited to one-quantum
scattering in which one phonon or one magnon is absorbed or emitted. This is fol-
lowed by study of magnetic scattering of neutrons near the Curie or Neel point, al-
ong with critical scattering of neutrons, which arises under second-order phase
transformation conditions. The review concludes with a treatment of the scattering
of polarized neutrons and an analysis of the scattering cross sections of the pol-
arized neutrons and the change in the incident-neutron polarization vector due to
scattering in ferromagnets and antiferromagnets. Orig. art. has 6 figs. and 190
formulas.

ASSOCIATION: none

SUBMITTED: 00
SUB CODE: PH

DATE ACQ: 12Jul63
NO REF SOV: 023

ENCL:00
OTHER: 018

Card 2/2

"The Effect of the Central Nervous System on the Respiratory Function of the Lungs." Canil al Sci, Gor'kiy State Medical Inst iment S. M. Kirov, Gor'kiy, 1955. (RL, No 9, Feb 55)

SO: Sum. No. 631, 26 Aug 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (14)

IZYU'IOV, Ye.G.

Effect of the central nervous system on the excretory function
of the pulmonary membrane. Farm. i toks. 18 no.5:23-27 S-O '55.

1. Kafedra farmakologii (zav.-prof. N.P.Sinitsyn) Gor'kovskogo
gosudarstvennogo meditsinskogo instituta imeni S.M.Kirova.
    (LUNGS, physiology,
        excretory funct., eff. of CNS)
    (CENTRAL NERVOUS SYSTEM, physiology,
        regulation of lung excretory funct.)

IZYUMOV, Ya.G.

Simple electric drive for a kymograph. Lab.delo 3 no.3:51 My-Je '57.
(MIRA 10:9)

1. Iz kafedry farmakologii (zav. - dotsent S.V.Conria) Krasnoyarskogo
meditsinskogo instituta.
(PHYSIOLOGICAL APPARATUS)

IZYUMOV, Y...

IZYUMOV, Ye.G.

Method for studying the excretory function of the lungs. Farm. i
toks. 20 no.3:87-88 My-Je '57.   (MIRA 10:10)

1. Kafedra farmakologii (zav. - dotsent S.V.Oparin) Krasnoyarskogo
gosudarstvennogo meditsinskogo instituta (nauchnyy rukovoditel'
raboty - prof. N.P.Sinitsyn)
        (RESPIRATION, function tests,
          technic & appar. (Rus))

IZYUMOV, Ye.G.

Method for investigating the secretory function of the lung [with summary in English]. Biul.eksp.biol. i med. 45 no.1:117-119 Ja '58.
(MIRA 11:4)

1. Iz kafedry farmakologii (zav. - dotsent S.V.Oparin) Krasnoyarskogo meditsinskogo instituta. Predstavlena deystvitel'nym chlenom AMN SSSR V.V.Parinym.
(LUNGS, physiology,
secretory funct., determ. (Rus))

IZYUMOV, Ye.G.

Use of BY-2 glue for fixing smoked kymographic tapes. Biul.eksp.biol.
i med. 48 no.10:113-114 O '59.   (MIRA 13:2)

1. Iz kafedry farmakologii (zav. - dots. M.N. Poluyektov) Krasno-
yarskogo gosudarstvennogo meditsinskogo instituta. Predstavlena
deystvitel'nym chlenom AMN SSSR V.V. Parinym.
(KYMOGRAPHY equip. & supply)

L 17696-66
ACC NR: AP5024177   SOURCE CODE: UR/0290/65/000/002/0126/0129

AUTHOR: Lapik, A. S.; Izyumov, Ye. G.

ORG: Novosibirsk Institute of Organic Chemistry, Siberian Department AN SSSR
(Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR)

TITLE: Pharmacological properties of the individual glycosides of *Sirenia silicu-
losa*

SOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya biologo-meditsinskikh
nauk, no. 2, 1965, 126-129

TOPIC TAGS: cardiovascular system, pharmacognosy, pharmacology, drug effect,
pharmaceutic, alkaloid

ABSTRACT: The pharmacological effect of two glycosides (A and B)--derived from a
crude preparation of *Sirenia siliculosa*--on the cardio-vascular system is investi-
gated. Experiments on cats showed that A is more toxic than B and that both lack
cumulative effects. Intravenous injections of 0.05 mg/kg increased the intensity
of cardiac contraction by 65% with A and 58% with B and simultaneously slowed the

UDC: 615.32+615.711

Card 1/2

L 17696-66
ACC NR: AP5024177

rhythm of cardiac contractions by 25% (A) and 22% (B). Both glycosides increased
the tone of the peripheral blood vessels of isolated rabbit ears and coronary ves-
sels of cat hearts. A had an effect of 15% while B had an 11% effect. Studies
on dogs showed that doses of 0.05-0.06 mg/kg of both glycosides increased the ar-
terial pressure, and increased the amplitude of the pulse wave by 120-160% while
decreasing its rhythm by 25-36%. In smaller doses the glycosides had no appre-
ciable effects on either blood pressure or vessel tone. Orig. art. has: 2 tables,
2 figures.

SUB CODE: 06/   SUBM DATE: 16Mar64/   ORIG REF: 007/   OTH REF: 000

Card 2/2

IZYUMOV, Yuriy Patrovich; SOKOLOVA, Ye., /red.; PAVLOVA, S., tekhn.red.

[The initiative of IUrii Topilin's brigade] Pochin brigady
IUriia Topilina. Moskva, Mosk.rabochii, 1961. 25 p.
(MIRA 14:2)

(Moscow--Machine tool industry)
(Moscow--Socialist competition)

AUTHORS: Berdyshev, A. A. and Izyumov, Yu. A.   126-5-3-24/31
TITLE: The/Exchange Model for Transition Metals (K s-d-
             obmennoy modeli perekhodnykh metallov)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol 5, Nr 3,
             pp 552-3 (USSR)

ABSTRACT: In the s-d model the atom is assumed to have several (z)
             d-electrons, of which the energy operator is the first
             equation in the paper. The spontaneous magnetization
             M is related to M_d, defined by Eq.(1), where b and c
             are constants defined in Ref.(4) (and not in the paper).
             If α is large, M varies exponentially with T (s-d exchange).
             If $\alpha \lll 1$ the exact form of the law will depend on the
             value assigned to b, which may be 10^{-14}—10^{-15} erg. The
             Euler-Maclaurin summation is then applied to give M_d in
             series form; the extra linear term this introduces
             then gives somewhat better agreement with experiment
Card 1/1   than a simple $T^{3/2}$ law. The paper contains 5 equations,
             (only one numbered).
             There are 10 references, 7 of which are Soviet, 3 English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo)
             (Ural State University imeni A.M. Gor'kiy)
SUBMITTED: April 11, 1957

             1. Metals--Electron transitions   2. Mathematics

56.5.15/55

The Generalization of the Model of the Spin Waves For the Case
Where Each Node is Surrounded by Several electrons.

t) the s-basic state in the isolated atom, also with the states
of strong degeneration. The wave function of these states be
φ_{f_ν} (q,s) with ν running through a finite totality of values.
The interatomic distances be so great that the possibility of
superposition of the electron orbits remains small The Hamil-
tonian of such a system is written in the representation of the
second quantization. Canonic transformations are applied to
certain Fermi operators. The thus obtained operators approxima-
tely satisfy the Bose interchange relations, if the weak excita-
tions of the system are investigated. By diagonalization an ex-
pression for the energy of the system investigated in the paper
under review is obtained.
Then the present paper presupposes at each node several electrons.
In a ferromagnetic, of the branches of the antiferromagnetic
only one depends quadratically on the quasi impulse. In an anti-
ferromagnetic there exist, at s electrons per atom, 2s mutually
independent branches of Bose excitations (in a ferromagnetic theye
are s).
Finally the paper under review deals with the following
auxiliary problem: The energy of a weakly excited state of a

CARD 2/3

SOV/56-35-5-13/56

24(3)
AUTHOR: Izyumov, Yu. A.

TITLE: On the Interaction of the External and Internal Electrons in Ferromagnetic Transition Metals (O vzaimodeystvii vneshnikh i vnutrennikh elektronov v ferromagnitnykh perekhodnykh metallakh)

ABSTRACT: Already Vonsovskiy and Turov (Refs 1, 2) investigated the inter-action between 4s- and 3d-electrons on the assumption that in transition metals these 4s-valence electrons together with the electrons of the not filled 3d-shell play the active part, for the strong exchange interaction between the latter leads to the complete directioning of 3d-electron spins, i.e. to ferromagnetism. The spectrum of such an electron system is of mixed character, containing Bose (Boze) and Fermi branches. For the purpose of investigating interaction between 3s- and 4d-electrons in transition metals, the author bases upon a Hamiltonian for a weakly excited state of the electron system, which was set up according to Vonsovskiy and Turov (Ref 2). It is shown that the dynamic part of interaction consists in

Card 1/2

SOV/126-7-4-3/26

AUTHOR: Izyumov, Yu.A.

TITLE: The Spectrum of Elementary Excitations of the Electron System of a Monoatomic Nonconducting Crystal. I. Z-Electrons Per Atom

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 7, Nr 4, pp 495-503 (USSR)

ABSTRACT: In the many-electron theory of solids one usually starts with models in which it is assumed that at each lattice point there is only one electron which takes part in the given processes inside the crystal. This is only a very approximate approach which is designed to reduce the mathematical difficulties. However, there exist types of solids which cannot be described by such simplified models, for example, semiconductors with closed electron shells and transition metals. In order to explain the electrical and magnetic properties of such substances, it is necessary to consider two groups of electrons. Recently, attempts have been made to discuss the case of a few electrons per atom on the many-electron scheme. Among these attempts are the papers by the present author (Ref 2) and by Kondorskiy

Card 1/3

SOV/120-7-4-3/26

The Spectrum of Elementary Excitations of the Electron System of a
Monoatomic Nonconducting Crystal.   I. Z-Electrons Per Atom

representation is given by Eq (4), (5) and (6).   The
Bose character of the spectrum is connected with the
fact that the number of electrons per atom is constant
during the excitation process.   The elementary
excitations associated with changes and conservation of
the spin projection are independent.   The author wishes
to thank S.V.Vonsovskiy, A.A.Berdyshev and
Ye.A.Turov for discussing the results of this work.
There are 5 Soviet references.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo
(Ural State University imeni A.M.Gor'kiy)

SUBMITTED: March 4, 1958

Card 3/3

SOV/126 — 7-5-5/25

A Note on the Formalism Due to Holstein and Primakoff (I)

relations (1) for the operators b_j and b_j^+ are approx-imately Bose relations. On the basis of the correspondence principle, it is assumed that the deviation of these operat-ors from Bose operators may be described by a function of the number of particles

$$n = b_j^+ b_j \quad .$$

Using Eqs (2) and (3), Eq (4) can be obtained, where $f_s(n)$ and $Z_s(n)$ are functions subject to condition (5). These functions are given by Eq (8). The converse problem, namely, the problem of finding operators b_{sj} and b_{sj}^+ which are

Card
2/3

SOV/126- — ·7-5-5/25

A Note on the Formalism Due to Holstein and Primakoff (Ref 1)

defined by Eqs (4) and (8) and belong to a space having the same dimensions as the spin space, is also solved. There are 3 references, of which 1 is Soviet and 2 are English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo (Urals State University imeni A.M.Gor'kiy)

SUBMITTED: December 31, 1958.

Card 3/3

66886

SOV/126-8-1-1/25

The Spectrum of Elementary Excitations of the Electron System of a Monoatomic Nonconducting Crystal. II. On the Limits of Applicability of the Dirac Exchange Hamiltonian

electrons forming an open shell of an atom is z and a weak Russell-Saunders coupling exists between these electrons so that the atom as a whole can be assigned a spin number s. The orbital states of these electrons are indicated by the subscript λ. The Hamiltonian for a system of electrons in a metal on the second quantization representation can be written down in the form of Eq (2) (Ref 2). If one neglects transitions between different orbital states and assumes the conditions given by Eq (3) hold, then the Hamiltonian given by Eq (2) is simplified to the form given by Eq (4), where $I(f_1\lambda_1 f_2\lambda_2) = F(f_1\lambda_1 f_2\lambda_2 f_2\lambda_2 f_1\lambda_1)$ is the exchange integral between two electron states. Since orbital transitions are forbidden, the only dynamic variables of the system are the spin coordinates and hence it is clear that the Hamiltonian given by Eq (4) may be expressed in terms of spin operators. The Hamiltonian, Eq (4), can Card 2/4 then be written down in the form given by Eq (5), where

66885

SOV/126-8-1-1/25

The Spectrum of Elementary Excitations of the Electron System
of a Monoatomic Nonconducting Crystal. II. On the Limits of
Applicability of the Dirac Exchange Hamiltonian

of Eq (6) one then obtains Eq (10), where W_o is a
constant and is given by Eq (11). In Eq (11) $S_{f\lambda}$
are classical spin vector operators. Eq (10) is
identical with the Dirac Hamiltonian given by Eq (1)
except for the constant term W_o. This shows at once
the character of the approximate nature of Eq (1).
The Hamiltonian given by Eq (1) can only be used when
the open electron shell of an atom is sufficiently
"compact" and, owing to internal exchange interactions,
behaves as one. If the electron shell is "loose", then
Eq (6) must be used or the more general Hamiltonian
given by Eq (2). This analysis is used to study the
effect of the character of the electron shell on spin
waves. For simplicity a ferromagnetic in which all the
z-electrons in an atom have the same spin directions is
considered. There are 5 references, 3 of which are
Soviet and 2 English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo
(Urals State University imeni A. M. Gorkiy)

SUBMITTED: March 4, 1958
Card 4/4

Magnetic Anisotropy on the Basis of Spin-orbit Interaction
SOV/126-8-2-25/26

crystal can lead to anisotropy. Ye.A. Turov is thanked for
valuable advice and S.V. Vonsovskiy   for
discussing the results.
There are 2 references, 1 of which is Soviet and 1 English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni
                A.M. Gor'kogo (Ural State University im. A.M. Gor'kiy)

SUBMITTED: November 11, 1958

Card 2/2

67656
SOV/126-6-6-2/24

Dipole-Dipole Interaction in Ferromagnetic Resonance

resonance. (Ref 2) and ? with temperat... fluctuations, ...e secular interaction leads to nonuniform local demagnetizing fields which cause the line broadening. At absolute zero this broadening disappears (complete ferromagnetic order). The fourth section is concerned with the effect of non-secular terms. It is concluded that dipole-dipole interaction plays an important part in ferromagnetic resonance and leads to a broadening which at $10^\bullet K$, for example, is of the order of 100 oersted. However, to explain the large line width at absolute zero, other mechanism of interaction must be considered. In the case of ferrites, the interaction of spin waves with natural irregularities in the magnetic structure of the lattice is important (Ref 9) while in metallic ferromagnetics, conduction electrons contribute to this mechanism. Acknowledgment is made to Ye.A.Turov who suggested this subject. There are 10 references, 9 of which are English and 1 German.

leads to a Kittel type frequency shift broadening of the line which increases . Due to the presence of thermal

Card 2/3

24 (2)
AUTHOR: Izyumov, Yu. A.

TITLE: A Remark on the Formalism of Holstein and Primakoff
               (Zamechaniye otnositel'no formalizma Gol'shteyna i Primakova)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 6,
               pp 1227-1230 (USSR)

ABSTRACT: It is a known fact that the energy spectrum of a magnetically
               ordered crystal may be approximated near the ground state by
               the spectrum of a weakly non-perfect Bose gas. From the
               mathematical point of view, this process is equivalent to the
               transition from spin- to Bose-operators. The author endeavors
               to find a connection between them in a general form. For this
               purpose, it is best to base upon the following exchange

               relations for the spin-operators: $\left[S_j^z, S_k^+\right] = \delta_{jk}S_k^+$;

               $\left[S_j^z, S_k^-\right] = -\delta_{jk}S_k^-$; $\left[S_j^+, S_k^-\right] = 2\delta_{jk}S_k^z$, where $S_j^\pm = S_j^x \pm iS_j^y$.
               In quasiclassical approximation - for large spins $(s \gg 1)$
               and small deviations from the ground state (as quantization
               axis the z-axis is selected) it is easy to show that

Card 1/5

A Remark on the Formalism of Holstein and Primakoff   SOV/20-125-6-14/51

b_{sj} and b_{sj}^+ as are defined by the above written down relations and act in a space of the same dimension number, i.e. $2s + 1$ as also the spin operators. Between these operators the exchange relations $b_{sj}b_{sk} - b_{sk}b_{sj} = 0$; $b_{sj}b_{sk}^+ - b_{sk}^+ b_{sj} =$

$= \delta_{ik}(1 + B_s(\hat{n}_j))$ are assumed to hold, where $B_s(\hat{n}_j)$ is an unknown function of the operator $\hat{n}_j \equiv b_{sj}^+ b_{sj}$. Here it further holds that $\lim_{s \to \infty} B_s(\hat{n}_j) = 0$. The exchange relations just written down are satisfied if $b_{sj}^{+\,2s+1} = b_{sj}^{2s+1} = 0$ and $B_s(\hat{n}_j) = a_s b_{sj}^{+\,2s} b_{sj}^{2s}$ holds. The eigenvalues of the operator $\hat{n} = b_s^+ b_s$ are the integers $0, 1, 2, \dots, 2s$. The matrices $\{b_s\}$ and $\{b_s^+\}$ (which give a linear representation of the operators b_s and b_s^+ respectively) satisfy all necessary relations and give a linear representation of the operators b_s and b_s^+. The total number

Card 3/5

A Remark on the Formalism of Holstein and Primakoff   SOV/20-125-6-14/61

ASSOCIATION: Ural'skiy gosudarstvennyy universitet im. A. M. Gor'kogo
(Ural State University imeni A. M. Gor'kiy)

PRESENTED: January 15, 1959, by N. N. Bogolyubov, Academician

SUBMITTED: January 8, 1959

Card 5/5

IZYUMOV, Yu. A.

SCV/4593

PHASE I BOOK EXPLOITATION

Vsesoyuznoye soveshchaniye po fizike, fiziko-khimicheskim svoystvam ferritov i fizicheskim osnovam ikh primeneniya. 3d, Minsk, 1959

Ferrity: fizicheskiye i fiziko-khimicheskiye svoystva. Doklady (Ferrites: Physical and Physicochemical Properties. Reports) Minsk, Izd-vo AN BSSR, 1960. 655 p. Errata slip inserted. 4,000 copies printed.

Sponsoring Agencies: Nauchnyy sovet po magnetizmu AN SSSR. Otdel fiziki tverdogo tela i poluprovodnikov AN BSSR.

Editorial Board: Resp. Ed.: K. M. Sirota, Academician of the Academy of Sciences BSSR; L. F. Belov, Professor; Ye. I. Kondorskiy, Professor; K. M. Polivanov, Professor; R. V. Telesnin, Professor; G. A. Smolenskiy, Professor; N. N. Sholtte, Candidate of Physical and Mathematical Sciences; K. M. Smolyarenko; and Tech. Ed.: L. A. Bashkirov; Ed. of Publishing House: S. Khalyavskiy.

PURPOSE: This book is intended for physicists, physical chemists, radio electronics engineers, and technical personnel engaged in the production and use of ferromagnetic materials. It may also be used by students in advanced courses in radio electronics, physics, and physical chemistry.

COVERAGE: The book contains reports presented at the Third All-Union Conference on Ferrites held in Minsk, Belorussian SSR. The reports deal with magnetic transformations, electrical and galvanomagnetic properties of ferrites, studies of the growth of ferrite single crystals, problems of ferrites having rectangular hysteresis loops and multicomponent ferrite systems, electrochemical analysis of ferrites, studies in magnetic exhibiting spontaneous rectangularity, problems in magnetic attraction, highly coercive ferrites, magnetic spectroscopy, ferromagnetic resonance, magneto-optics, physical principles of using ferrite components in electrical circuits, anisotropy of electrical and magnetic properties, etc. The Committee on Magnetism, AS USSR (S. V. Vonsovskiy, Chairman) organized the conference. References accompany individual articles.

SOV/4593

Ferrites (Cont.)

Bershteyn, I. M., and A. A. Astashenskiy. Investigation of the Ferromagnetic Resonance of a Cobalt Ferrite in an Internal Field of Anisotropy   501

Zvyazov, P. S., T. G. Izyumova, and G. V. Skrotskiy. The Effect of Electronic Magnetic Resonance on the Optical Properties of Ferromagnetic and Paramagnetic Dielectrics   505

Izyumov, Yu. A., and G. V. Skrotskiy. Magnetic Spin Influence in Conduction Electrons in Alkali and Ferromagnetic Metals   513

Kotsyubov, Yu. N., and A. K. Zamychkova. The Effect of Anisotropic Elastic Stresses on Ferromagnetic Resonance Absorption in Nickel Ferrite   519

Gushchina, Z. M., V. A. Fabrikov, and V. D. Kudryavtsev. Temperature Characteristics of Ferrite Components in UHF Devices   524

Card 15/18

Card 4/18

Spin Resonance on Conduction Electrons
in Ferromagnetic Metals

magnetic moment, the energy of the conduction electrons must depend on the orientation of the spin relative to the magnetization vector, and for the simplest case it may be assumed that the energy of an electron ε_k^σ is a function of both the quantum numbers $\vec{k}$ and σ (quasimomentum and spin). The form of the magnetic resonance absorption lines is calculated on the assumption that the effective mass of conduction electrons depends on the orientation of the spin relative to the spontaneous magnetic moment. The interaction of the electrons with one another and with the lattice is described by the operator $\hat{\mathcal{H}}_{int}$, in terms of which the energy of the system of conduction electrons in the second quantization representation is represented by the Hamiltonian

$$\hat{\mathcal{H}} = \sum_{k\sigma} \varepsilon_k^\sigma \, a_{k\sigma}^+ a_{k\sigma} + \hat{\mathcal{H}}_{int} \ . \ \text{If } \hat{S}_\alpha \text{ is the spin operator of the electron}$$

system, the operator of the magnetic moment may be put as $\hat{M}_\alpha = 2\mu_0 S$ (μ_0-Bohr magneton). The $\hat{S}_i$ ($i = x,y,z$) are given by formula (13), the

Card 2/3

80526

S/126/60/009/05/003/025
E032/E514

The Spectrum of Resonance Frequencies of a Ferromagnetic Metal

interaction, the exchange interaction is the most important. The present paper is concerned with the effect of the s-d-exchange interaction on the spectrum of natural frequencies of the magnetic moment in transition metals. In order to estimate the contribution due to the exchange interaction, the s-d-exchange model described by Vonsovskiy in Ref 1 is employed. Vonsovskiy and Turov (Ref 2) have shown that the Hamiltonian for a system of s + d-electrons in a constant magnetic field H directed along the z-axis can be written in the form of Eq (1), where S_f^- and S_f^+ are the spin operators for the f-th site, S_d^α is the total spin of d-electrons, S_s^α is the total spin of s-electrons ($\alpha = x, y, z$), $a_{k\sigma}^+$ and $a_{k\sigma}$ are the Fermi creation and annihilation operators for the states of s-electrons on the Bloch scheme, $J(k_1 k_2)$ is the s-d-exchange integral and g_d and g_s are the Lande factors for the d- and s-electrons.

Card 2/5

80526

S/126/60/009/05/003/025
E032/E514

The Spectrum of Resonance Frequencies of a Ferromagnetic Metal

coupling parameter. In accordance with the approximation described by Eq (6), the Hamiltonian given by Eq (1) can be rewritten in the form of Eq (10). The approximation thus turns out to be identical with the molecular field approximation. In order to determine the natural frequencies for the spin vector, Eqs (7) and (8) are linearized, assuming that the z-components of the spin vectors are constants, i.e.

$$S_d^z = \left\langle S_d^z \right\rangle \ ; \ \ S_s^z = \left\langle S_s^z \right\rangle .$$

This leads to the system of four equations given by Eq (11) in which ω_d and ω_s are the Larmor frequencies defined by Eq (12). Eq (11) leads to the two natural frequencies given by Eq (13) and in the special case when the g-factors of the s- and d-electrons are equal, Eq (13) simplifies to the simple form given by Eq (14). Thus, during resonance in a transition ferromagnetic metal two

Card 4/5

S/126/60/009/05/004/025
E032/E514

AUTHORS: Izyumov, Yu. A. and Yakovlev, Ye. N.

TITLE: On the Theory of the Heisenberg Model of a Ferromagnetic
with a Few Electrons Per Site

ABSTRACT: In many cases the properties of ferromagnetics can be
satisfactorily described by the simple Heisenberg model
in which it is assumed that each lattice site can be
characterized by the resultant spin s and that at
absolute zero the spins are completely ordered. The
Hamiltonian of such a system placed in a magnetic field
H is usually written in the form given by Eq (1), where
S$_f$ is the spin operator for the site f and J(f-f') is
the exchange integral.   At the present time only the
lower eigenvalues of the operator given by Eq (1) are
well known.   These eigenvalues correspond to weakly
excited states of the ferromagnetic which appear at low
Card 1/6 temperatures.   It is very difficult to find a method for

S/126/60/009/05/004/025
E032/E514

On the Theory of the Heisenberg Model of a Ferromagnetic with a Few Electrons Per Site

The b_f and b_f^+ operators are not Bose operators and obey the further relations given by Eq (4), where n_f is the occupation index. The retarded and advanced Green functions employed in the present generalization of the Bogolyubov-Tyablikov theory are defined by Eq (5), where $b_g(t)$ is the b_g operator on the Heisenberg representation, the square brackets indicate the commutator and the $\langle \cdots \rangle$ denotes an average over a statistical ensemble with a Hamiltonian H, i.e.

$$\langle \cdots \rangle = Sp\left\{ e^{-\beta H} \cdots \right\} / Sp \; e^{-\beta H}; \quad \beta = 1/kT$$

It is easy to show that the Green functions defined in this way obey the differential equation given by Eq (6), where h is the Planck constant divided by 2π and $\delta(t - t')$ is the Dirac δ-function. If the quantity

Card 3/6

S/126/60/009/05/004/025
E032/E514

On the Theory of the Heisenberg Model of a Ferromagnetic with a Few Electrons Per Site

contains, in addition to spin waves, high energy Bose branches which are the analogues of optical vibrations in solids when it is assumed that the elementary cell consists of a number of atoms. The presence of such branches in the energy spectrum of a real ferromagnetic, in which there are a number of "magnetic" electrons per atom, should be manifested in magnetic resonance absorption corresponding to transitions between energy levels with $k = 0$. In such cases an additional maximum should be observed at a frequency given by Eq (27), which in general lies in the infrared region. However, near the Curie point when σ is very small (σ is the relative magnetization; Eq (15)) this frequency may lie in the radio range. This situation is equivalent to the case of ferrites with a number of sub-lattices for which an analogous additional maximum has been observed. Acknowledgments are made to

Card 5/6   Corresponding Member of the Academy of Sciences, USSR

87213

9.4300 (3203, 1043, 1143)
24.7900 (1035, 1144, 1160)

S/126/60/010/001/026/027/XX
E032/E314

AUTHOR: Izyumov, Yu.A.

TITLE: Effect of Irregularities in the Magnetic Structure
on the Width of the Ferromagnetic Resonance Line

PERIODICAL: Fizika metallov i metallovedeniye, 1960.
Vol. 10, No. 1, pp. 140 - 142

TEXT: Clogston et al (Ref. 1) have discussed the scattering
of spin waves on natural irregularities in the magnetic
structure assuming that this is the mechanism responsible
for the observed increase in the ferromagnetic resonance
line width in some ferrites.   The obtained formula for the
line width is in agreement with experiment insofar as the
temperature dependence is concerned, although the width itself
was found to be somewhat lower than the experimental value.
The present author accepts this mechanism but approaches the
problem from the following point of view.   Consider a ferro-
magnetic crystal placed in a constant magnetic field H,
which is directed along the z-axis, and an alternating magnetic
field of frequency ω, which is polarised in a perpendicular

Card 1/5

87213

S/126/60/010/001/026/027/XX

E032/E314

Effect of Irregularities in the Magnetic Structure on the Width of the Ferromagnetic Resonance Line

of the specimen and $\hat{M}_x(t)$ is the same operator in the Heisenberg representation. The Hamiltonian is then separated into two parts, namely $\underline{H}_o$ and H', where $\underline{H}_o$ is the sum of the exchange operator of the system of spins and their energy in the constant magnetic field and H' is a dipole-dipole interaction energy. A perturbation calculation is then performed and it is shown that the half-width is given by

$$\Delta_{1/2}\omega = 0.01 \frac{\langle \Delta D^2_{jk} \rangle}{hJ} \; s\, z\, \mu \qquad (11)$$

whereas Kubo and Tomita (Ref. 1) have found that

$\Delta_{1/2}\omega \sim \sqrt{\mu}$. If it is assumed that fluctuations in the

Card 3/5

87213

S/126/60/010/001/026/027/XX
E032/E314

Effect of Irregularities in the Magnetic Structure on the
Width of the Ferromagnetic Resonance Line

dipole coefficient are of the same order as the coefficients
themselves, i.e.

$$\langle \Delta\, D^2_{jk} \rangle^{1/2} \sim 10^4 \text{ Oe}$$

and that $J \sim 10^6$ Oe , sz $\sim$ 10 and $\mu \sim 1$, then the
half-width is found to be of the order of 10 Oe This is
in agreement with the experimental line width Clogston's
formula, on the other hand, yields a figure of less than 1 Oe

Card 4/5

VOIISOVSKIY, S.V.; IZYUHOV, Yu.A.

Statistical properties of the electron system of ferronagnetic tran-
sition metals. Fiz. met. i metalloved. 10 no.3:321-334 S '60.
(MIRA 13:10)

1. Institut fiziki metallov AN SSSR.
        (Transition metals)   (Electrons)

85959

1144, 1395, 1482, 1162

S/126/60/010/005/001/030
E032/E414

AUTHORS: Izyumov, Yu.A. and Polyak, Yu.Ya.

TITLE: The s - d Exchange Interaction, and Resonance in Ferromagnetic Metals

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.5, pp.641-649

TEXT: The properties of ferromagnetic metals and alloys of transition elements indicate that their magnetic properties are in the first instance associated with electrons in unfilled shells of atoms with uncompensated spins.   The exchange interaction between these electrons and conduction electrons, i.e. the so-called s - d exchange interaction, has an important effect on their collective properties in a crystal.   Vonsovskiy et al (Ref.2 and 3) have shown that when the interaction with conduction electrons is taken into account, there appear two branches of spin waves.   In a further paper (Ref.3) these workers investigated the damping of spin waves during their interaction with conduction electrons.   This analysis is continued in the present paper with

Card 1/4

85959
S/126/60/010/005/001/030
E032/E414

The s - d Exchange Interaction, and Resonance in Ferromagnetic
Metals

special emphasis on the theory of ferromagnetic resonance.   In the
first part of the paper the complex magnetic susceptibility of a
transition ferromagnetic metal is calculated as a function of the
frequency of the external magnetic field.   The Hamiltonian
employed is that used by Vonsovskiy and Turov (Ref.4) and is given
by Eq.(1.1) of the present paper.   It consists of six terms.
The first term contains the energy of a conduction electron E_k
corresponding to a quasi-momentum k ,   and the Fermi creation and
annihilation operators $a_{k\sigma}$ and $a_{k\sigma}^+$.   The second term
represents the exchange energy of d-electrons, and the third and
fourth terms the Zeeman energy of d- and s-electrons in a magnetic
field.   The last two terms give the s - d exchange operator.
These two terms include the s - d exchange interval $J(k_1 k_2)$.
The Hamiltonian is used to calculate the susceptibility on the
molecular field approximation and also by the methods of
perturbation theory.   It is shown that in the case of specimens
whose dimensions are smaller than the depth of the skin layer, in

Card 2/4

85959

S/126/60/010/005/001/030
E032/E414

The s – d Exchange Interaction, and Resonance in Ferromagnetic
Metals

energy of two conduction electrons with the same quasi-momentum
but different spin directions differs by 2sJ(kk). There are
9 references: 6 Soviet and 3 Non-Soviet.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: May 26, 1960

Card 4/4

Exchange Interaction of Inner and Outer Electrons S/020/60/132/04/17/064
in Transition Metals   B014/B007

spectrum of the d- and s-electrons. For this purpose the authors use the
statistical Green function developed by N. N. Bogolyubov and S. V.
Tyablikov (Ref. 7). The development of the distribution functions of the
Bose- and Fermi particles is dealt with in detail, and formulas (11) and
(12) are obtained. As turned out in the course of a further investigation,
the exchange interaction between the outer and inner electrons leads to
an exchange coupling between the inner electrons. As may be seen from
formulas (18) and (19), this interaction has the character of a ferro-
magnetic coupling. If a direct d-d exchange of the inner electrons is
lacking, this leads to ferromagnetism. Indirect interaction by conduction
electrons leads only to the renormalization of the exchange integral and
does not change the energy spectrum of the spin waves. Ye. A. Turov,
Pu Fu-cho, T. Shiklosh, and D. N. Zubarev are mentioned. There are
9 references, 6 of which are Soviet.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of
             Metal Physics of the Academy of Sciences, USSR). Ural'skiy
             gosudarstvennyy universitet im. A. M. Gor'kogo (Ural State
             University imeni A. M. Gor'kiy)

Card 2/3